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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/088,961	12/30/2002	Ying Luo	A-68297-1/RMS/DHR	4915

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EXAMINER	
ANDRES, JANET L	
ART UNIT	**PAPER NUMBER**
1646	

DATE MAILED: 03/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/088,961	LUO ET AL.	
	Examiner	Art Unit	
	Janet L. Andres	1646	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 December 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) _____ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *11, 12, 17-19, 21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

RESPONSE TO AMENDMENT

1. Applicant's amendment filed 31 December 2004 is acknowledged. Claims 11, 12, 17-19, and 21 are pending and under examination in this office action.

Objections Withdrawn

2. The objection to the specification is withdrawn in response to Applicant's amendment.

3. The objection to claim 21 is withdrawn in response to Applicant's amendment.

Claim Rejections Maintained

4. The rejection of claims 11, 12, 17-19, and 21 under 35 U.S.C. 101 as lacking utility is maintained for reasons of record in the office action of 9 June 2004.

Applicant argues that a *prima facie* case of lack of utility has not been provided. Applicant argues that the specification discloses a specific utility in that a kinase activity has been disclosed that correlates with cancer. Applicant argues that the specification discloses effects on the cell cycle, modulation of the pathways involved in tumor progression, and TRAF protein binding. Applicant argues that methods for identifying compounds that modulate the claimed protein are provided and that these can be used to treat cancer, and that methods to diagnose cancer by detecting changes in Mkinase gene expression are also provided. Applicant additionally asserts that polymorphisms in the Mkinase gene are associated with cancer. Applicant additionally submits a declaration from Dr. Hitoshi. Applicant again asserts that no *prima facie* case for lack of utility has been provided and the Examiner must provide evidence to support a factual conclusion of [lack of] credibility of the asserted utility. Applicant submits the publication of Kato et al. as teaching a protein of 99% identity to Applicant's. Applicant states that the protein did not have kinase activity but maps to a chromosome 11 region that is a

breakpoint for chromosomal translocations associated with certain cancers. Applicant further cites Kato as stating that the protein localizes to centrosomes during mitosis, suggesting a role in the cell cycle. Applicant reiterates that a declaration by Dr. Hitoshi has been submitted. Applicant states that an assertion of a function in the diagnosis of cancer is sufficient to meet the utility guidelines. Applicant states also that "modulators, e.g. inhibitors, of a cell cycle regulator" have utility and that an inhibitor of a protein that enhances regulation is useful, as is an inhibitor of a negative regulator.

Applicant's arguments have been fully considered but have not been found to be persuasive. As was stated in the previous office action, Applicant has disclosed that Mkinase binds to TRAF4 as well as to many other proteins and teaches that it is involved in the cell cycle. However, Applicant has provided no teachings as to what the consequences of the binding to TRAF4 or to the other proteins, for example helicase, an LDL receptor-related protein, von Willebrand factor, or a putative G-protein coupled receptor might be. All that is provided is that it is somehow involved in the cell cycle. The credibility of this assertion is not challenged. However, how it is involved, what it does, and what the consequences of affecting its activity or its binding with TRAF4 might be are not set forth. Clearly, further research is required before the artisan would know how to use either Mkinase or agents affecting it. Thus these utilities are not substantial. See *Brenner v. Manson*, 148 U.S.P.Q. 689 (1966), in which the court expressed the opinion that, while, all chemical compounds are "useful" to the chemical arts when this term is given its broadest interpretation, this broad interpretation was not the intended definition of "useful" as it appears in 35 U.S.C. §101, which requires that an invention must have either an immediately apparent or fully disclosed "real world" utility. The instant assertion that the

protein is involved in the cell cycle, which is a complex process involving many steps, activators, and inhibitors, is not sufficient to indicate what it does or how it could be used. Similarly, the general statement that changes in its expression can be used to detect cancer does not provide it with a utility. Applicant has described no cancers in which its levels are affected and provides no guidance as to how it could be used to diagnose any cancers. In addition, no polymorphisms are described. What are presented are ideas for inventions and suggestions for experiments, not the inventions themselves.

Dr. Hitoshi states that one of skill in the art would believe that Mkinase "has a role" in tumorgenesis and signal transduction. Dr. Hitoshi further states that, based on Kato and on the comparison of NTKL and Mkinase, it is more likely than not that the Mkinase gene is useful as a diagnostic for cancer. Dr Hitoshi concludes that one of skill would believe that the Mkinase protein was involved in tumorogenesis.

The declaration of Dr. Hitoshi has been fully considered but fails to overcome the rejection. As was stated above, the credibility of Applicant's assertion is not challenged. However, as stated previously, the mere statement that Mkinase is somehow "involved" in cell cycling and tumorigenesis fails to proved any guidance as to how it is involved. Based on Applicant's teachings, the artisan would only know that it bound to a number of proteins, including TRAF4. The artisan would not be able to tell whether it was active during the cell cycle or served as an inhibitor of the cell cycle. Furthermore, the artisan would not be able, based on Applicant's specification, to diagnose any cancer. Applicant provides only the suggestion that it can be used to diagnose cancer but no information as to what cancer or cancers could be diagnosed and whether, for example, Mkinase levels would be decreased or increased.

The teachings of Kato provide evidence that the protein might be a useful tool for cancer diagnosis. However, Applicant's specification provides no guidance to indicate that the gene was located near a breakpoint. Again, all that is provided are general assertions. *See In re Kirk*, 153 USPQ 48, 53 (CCPA 1967) quoting the Board of Patent Appeals,

'We do not believe that it was the intention of the statutes to require the Patent Office, the courts, or the public to play the sort of guessing game that might be involved if an applicant could satisfy the requirements of the statutes by indicating the usefulness of a claimed compound in terms of possible use so general as to be meaningless and then, after his research or that of his competitors has definitely ascertained an actual use for the compound, adducing evidence intended to show that a particular specific use would have been obvious to men skilled in the particular art to which this use relates.'

With respect to Applicant's final arguments, a teaching of a "real world utility" as an invention that enhances or inhibits cell cycle progression would meet the utility guidelines. The problem, however, as stated in the previous office action, is that Applicant does not disclose whether Mkinase is an inhibitor or an enhancer of the cell cycle. All that is disclosed is that the protein binds TRAF4. No consequences of this binding are provided. Thus, the artisan would be unable to use Mkinase or inhibitors or enhancers thereof, because the artisan would not know whether inhibition or enhancement of proliferation would be expected from any of these agents.

5. The rejection of claims 11, 12, 17-19, and 21 under 35 U.S.C. 112, first paragraph, as lacking enablement because the invention lacks utility is maintained for reasons of record in the previous office action.

Applicant argues that Mkinase has utility and thus this rejection should be withdrawn. Since, for the reasons stated above, Applicant's arguments have not been found to be persuasive, the rejection is maintained.

6. The rejection of claims 11, 12, 17-19, and 21 because, were the specification enabling for the protein identical to SEQ ID NO: 2 and methods using it, it would still lack enablement for proteins not identical to SEQ ID NO: 2, is maintained for reasons of record in the previous office action.

Applicant argues that inoperative embodiments could be avoided with out undue experimentation. Applicant states that the properties of amino acids are well known in the art. Applicant argues that the kinase domain has been identified. Applicant further states that identification of proteins having the structural and functional characteristics described was well within the means of one skilled in the art and would not require undue experimentation. Applicant argues that working examples and standard techniques are described.

Applicant's arguments have been fully considered but have not been found to be persuasive. The only functional requirement in the claims is that the Mkinase bind to TRAF4. The only structural requirement is that it have 95% identity to the disclosed sequence. Applicant has taught no regions required for this binding and furthermore has taught no consequences of the binding. Binding, absent any consequence, is not a functional limitation; it does not require any property that would be characteristic of the claimed genus of proteins of 95% homology to that which is described. While inoperative embodiments may be encompassed, MPEP §2164.08 teaches that:

"The standard is whether a skilled person could determine which embodiments that were conceived, but not yet made, would be inoperative or operative with expenditure of no more effort than is normally required in the art. Atlas Powder Co. v. E.I. du Pont de Nemours & Co., 750 F.2d 1569, 1577, 224 USPQ 409, 414 (Fed. Cir. 1984)"

And further:

[C]laims reading on significant numbers of inoperative embodiments would render claims nonenabled when the specification does not clearly identify the operative embodiments and undue experimentation is involved in determining those that are operative. Atlas Powder Co. v. E.I. duPont de Nemours & Co., 750 F.2d 1569, 1577, 224 USPQ 409, 414 (Fed. Cir. 1984); In re Cook, 439 F.2d 730, 735, 169 USPQ 298, 302 (CCPA 1971).

Since there are no regions defined that are important for binding, and since simply binding to a protein, absent any consequence of binding, does not impart any characteristic function to the class of proteins, the artisan could not in fact determine which embodiments that "were conceived and not yet made" would be operative. Neither the relevant structural characteristics nor any actual function are provided.

7. The rejection of claims 10, 11, 17-19, and 21 under 35 U.S.C. 112, first paragraph, as lacking written description is maintained for reasons of record in the previous office action.

Applicant argues that the claimed proteins and methods using them require 95% homology to the disclosed sequence and that kinase domains and nuclear localization domains are provided. Applicant further states that the proteins bind TRAF4. Applicant argues that assays for proteins that bind to Mkinase are described.

Applicant's arguments have been fully considered but have not been found to be persuasive.

As stated above, what is required by the claims is that the proteins bind TRAF4. No features required for this binding are required that would allow the artisan to identify proteins possessing this characteristic. Further, binding is not sufficient to describe a genus pf proteins; it requires no definitive characteristics since, as Applicant has shown, many unrelated proteins can bind to Mkinase.

NO CLAIM IS ALLOWED.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janet L. Andres whose telephone number is 571-272-0867. The examiner can normally be reached on Monday, Tuesday, Thursday, Friday, 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anthony Caputa can be reached on 571-272-0829. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Janet L. Andres, Ph.D.
1 March 2005

JANET ANDRES
PRIMARY EXAMINER